

Another Nice Trip to Sumatra

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Introduction

Sumatra is definitely the trendy location for *Nepenthes* explorers at the moment. In the last two years, seven species have been described from the island and the list of Sumatran *Nepenthes* now rivals that of Borneo in size. Over the last eight years, I have spent a considerable amount of time exploring Borneo and studying its *Nepenthes*. During that time, numerous reports of new species from Sumatra surfaced and the urge for me to visit the island and see some of them grew and grew. The CPN article by Hopkins *et al.* (1990) added further fuel to the fire, as it became apparent to me that it was possible to see most of the Sumatran species in a short space of time and with relatively little effort compared to the exertions required to find many of the Bornean *Nepenthes*. Moreover, it seemed that a number of Sumatran *Nepenthes* were not very well understood taxonomically and the longer a situation such as that goes on, the more difficult it becomes to sort out.

Finally, in September 1995, I got my chance to visit Sumatra. A letter earlier in the year from a friend, who thought he had found a new species from Sumatra, helped bring my plans to fruition. We decided the best way of finding out the identity of his plant would be to go to Sumatra and find it again, so that we could compare it with the other species in the region and see if it was new. This provided the perfect excuse to try to see as many other *Nepenthes* as possible while we were there.

This article provides an overview of the species we saw and is largely a reply to the article by Hopkins *et al.* (1990). Where possible, I have included discussion of the newly described Sumatran species, though we did not manage to find all of these. The map of Sumatra provided by Hopkins *et al.* (1990) includes all of the important destinations we visited and can be used in conjunction with this article.

North Sumatra

Our trip started at Medan, the capital of North Sumatra. I had been told by many people that Medan was a place to avoid, but did not find it to be that bad (especially when compared to Sibolga—see below!). We drove from there to Berastagi, armed with the information that there were numerous lowland *Nepenthes* by the road on the way. This may well be the case, but we had almost reached Berastagi before we realised we had left Medan! Any plants that might grow along this stretch of road would have to wait for our return. From Berastagi, we drove around the edge of Lake Toba to Prapat. We saw a lot of *N. tobaica* on the way, but nothing else. Most of the pitchers were greenish-yellow, but a couple were a nice coffee-brown colour.

The next day, we climbed Gunung Pangulubao. Since Kurata (1972) described *N. rhombicaulis* from this mountain it has become something of a beacon for *Nepenthes* enthusiasts who visit Sumatra. Recently, *N. ovata*, *N. miki* and *N. xiphioides* have been described from G. Pangulubao (Nerz & Wistuba, 1994; Salmon & Maulder, 1995), making it one of the richest locations for *Nepenthes* species in Sumatra. The climb to and from the summit can be done in a day and we saw *N. rhombicaulis*, *N. ovata* (Figure 1) and *N. spectabilis* there. On the way down we saw *N. tobaica*, *N. ampullaria* and a species of *Paphiopedilum*, but it was not in flower.

Despite an extensive search around the summit area, we did not see *N. miki* or *N. xiphioides*. However, the summit ridge of G. Pangulubao is quite long and can be reached from more than one direction, so we assumed that we were simply not

in the right place at the right time. From the photos which accompanied the description of *N. mikei* (Salmon and Maulder, 1995), there seems to be no doubt that it is quite distinct from any other species, though *N. xiphioides* is now considered a synonym of *N. gymnamphora* (Schlauer, 1996).

If *N. rhombicaulis* was the only known species of *Nepenthes*, it would probably be considered fairly spectacular. Unfortunately, it is not and almost all other *Nepenthes* are more interesting than it is! The upper pitchers are rarely produced, though we did manage to find one small one (Schmid-Hollinger (1994) managed to find more) and the lower pitchers are often embedded in moss and detritus. It grows just below the summit, often below the point at which mossy forests occur. In this sense, it reminded me of *N. hirsuta* of Borneo, which also grows in the litter layer of montane forests. Hopkins *et al.* (1990) were not entirely sure about the identity of some of the pitchers they found on G. Pangulubao. The two photographs at the top of page twenty-one of their article illustrate *N. rhombicaulis*, though I am not 100% certain about the one with the large brown peristome—that looks a bit like *N. ovata*—but a lot more information is required before any conclusions can be drawn. Perhaps those authors now know the answer themselves?

Fortunately, the extreme development of the peristome of *N. ovata* pitchers makes up for the drabness of *N. rhombicaulis*. *N. ovata* is largely epiphytic, but also grows in mossy banks beside the trail. The lower pitchers are superb, with expanded dark red peristomes and light green cups. The upper pitchers are less spectacular, but are a very elegant shape. *N. spectabilis* was not quite as common as we had expected and we got the impression that collectors had taken a bit of a toll on the population, partly because very few immature plants were visible. However, we did not get the chance to examine this species on Gunung Sinabung, so we cannot really draw any serious conclusions about the densities at which it grows. We climbed down G. Pangulubao using a different path to the one we climbed up. We thought this would increase our chances of seeing *N. mikei*, but the path did not follow the direction we expected it to and all we saw was more *N. tobaica*. Our guide then took us to a site where he said another *Nepenthes* grew. We walked across rice paddies for about twenty minutes, until we came to a small patch of swampy vegetation. The plants turned out to be *N. ampullaria*, but the leaves were quite different in shape to those of the Bornean *N. ampullaria*. They were larger, more acute at the apex and the lateral venation was a lot more pronounced. We could not figure out what they were until one of the local children picked one of the pitchers out from the depths of the swamp!

The next day, we drove down to Sibolga to look for *N. sumatrana* (Figure 2) and the other lowland species known from that area. Since Danser (1928) united them, *N. sumatrana* and *N. treubiana* have both been known by the latter name and the only other known location was in Irian Jaya. Jebb (1991) examined the herbarium specimens of the Sumatran and Irianese populations and felt that there were some substantial differences, but stopped short of reclassifying either of them. Nerz & Wistuba (1994) concluded that the differences between the plants at the two sites were sufficient to reclassify them and the Irianese populations are now known as *N. treubiana*, whereas the Sumatran ones have been returned to their original name of *N. sumatrana*.

We were also able to confirm the observation of Hopkins *et al.* (1990) that the distribution of *N. tobaica* does extend some distance west of the lake towards Sibolga—we found plants as low as 700 m above sea level. Growing with *N. sumatrana* we saw more *N. ampullaria*, *N. gracilis* and a few pathetic specimens of *N. reinwardtiana*. We found a number of plants of the black form of *N. gracilis* (both here and close to Sibolga) but, contrary to the opinions of Hopkins *et al.* (1990), I think they are pretty ordinary compared to the black ones from north-western Borneo!

A little further down the road we saw a large stand of what is usually referred to as the Sumatran *N. alata* (Back cover). Some people feel that the Sumatran populations of *N. alata* differ sufficiently from those of the Philippines to be considered

a separate species. Others do not and it will be interesting to see how the current monographers such as Martin Cheek and Matthew Jebb treat these populations. If the Sumatran populations are returned to species status, they will assume their old epithet: *N. eustachya*.

Later that day, we arrived in Sibolga and set about looking for a hotel. Thirty minutes later, having decided that it was the grubbier little town we had ever had the misfortune to stumble across, we decided to drive on to Bukittinggi, 350 km away.

West Sumatra

We got to Bukittinggi at midnight, exhausted but glad to be somewhere a little more civilised. This pleasant town is best known for the three large mountains which surround it: G. Merapi, G. Singgalang and G. Sago. Unfortunately, we only had time to climb one of these on this trip and we chose G. Singgalang.

The climb up Gunung Singgalang starts from a radio repeater station at about 1400 metres above sea level. From there, it was a relatively easy (though long) walk up a clear path to the summit. A short distance along the trail, we found a number of plants of *N. gymnamphora* growing in a bamboo thicket (Figure 3). The moss forest further up the trail was very pretty, but the trail was strewn with rubbish and there were few *Nepenthes* to see. We found one very impressive plant of *N. bongso* (Figure 4) on the way up, but apart from that, we had to wait until we reached the crater lake near the summit to see any more. *N. bongso* has had a very confused history and even though much of this confusion has now been untangled (see below), it is still a difficult plant to distinguish reliably.

The crater lake at the top of G. Singgalang is quite picturesque, but is also surrounded by piles of rubbish. The actual summit is a little further along the trail, at the far end of the lake. We spent an hour walking up to this, as I was expecting to see the best stand of *Nepenthes* on the mountain there, but was surprised to find that none grew there at all: they are all found around the shores of the lake and all of them are *N. singalana*. This species is quite similar to *N. bongso*. The upper pitchers of *N. singalana* are very plain, but the lower ones are more interesting and are often a nice black colour. *N. pectinata* was also known from this mountain (as well as several others in the region), but Schlauer and Nerz (1994) showed that the specimens upon which the description of *N. pectinata* was based consisted of the lower pitchers of *N. gymnamphora* and the upper pitchers of *N. singalana*. *N. pectinata* is no longer considered to be a valid species. Although the climb up G. Singgalang was a good way to learn about the differences between *N. bongso* and *N. singalana*, it is not a mountain I would recommend to someone who is pressed for time and who wants to see as many *Nepenthes* as possible!

Our next destination was an area west of Bukittinggi, called the Harau Canyon. We were not sure what we would find here, but thought it was worth taking a look. *Nepenthes tenuis*, a species recently described by Nerz & Wistuba (1994) was apparently collected on a sandstone ridge above the river Tjampo. Given that the Harau Canyon contains a lot of steep sandstone ridges, it seemed like a good place to look, but we did not have the time to get serious about it. Nearby we found some nice stands of *Nepenthes*, in particular *N. alata*. I wanted to find two plants in particular: *N. adnata* and *N. rafflesiana* var. *longicirrhosa*. The former was originally described invalidly by Tamin & Hotta (1986), with the formal description coming from Schlauer and Nerz (1994). *N. rafflesiana* var. *longicirrhosa* was also described invalidly by Tamin & Hotta (1986), but has not been mentioned since.

Upon finding *N. rafflesiana* var. *longicirrhosa*, I was immediately certain that it was not a variety of *N. rafflesiana* at all and I do not know what Tamin and Hotta (1986) were thinking of when they classified it as such. After half an hour of head scratching, the penny dropped—this plant was the recently described *N. longifolia* (see Nerz and Wistuba (1994)). *N. longifolia* is so closely related to *N. sumatrana* that I sometimes find it difficult to see how these two can be distinguished from each other at all (Figure 5). The pitchers of the two are different in colour and there are some very minor morphological differences, but in all other respects, including

ecology, they are very similar indeed. Growing near *N. longifolia* and *N. alata* were *N. ampullaria*, *N. gracilis* and *N. albomarginata*. The *N. albomarginata* from this part of Sumatra are large and robust compared to those from Borneo and seem to be bigger than those from Peninsular Malaysia as well. Shivas (1985) commented on these differences and it does seem that this species exhibits greater geographical variations than most.

We saw some quite large and unusual plants of *N. gracilis* and given that we had spent the whole day looking for *N. adnata* without success decided that maybe that is what the latter species looks like. Just as we were about to give up altogether, we found the real thing (Front cover). *N. adnata* must be one of the smallest of all *Nepenthes*, but it is also one of the prettiest. The basal rosettes rarely exceed 15 cm in diameter and the pitchers rarely exceed 8 cm in height, but the whole plant is very beautiful and grows among thick mosses. It is an outstanding addition to the genus and it is nice to think that even after all this time and exploration, there are still some great botanical discoveries to be made in the forests of southeast Asia. Satisfied, we returned to Bukittinggi to prepare for the next stage of our trip.

The plant we both wanted to see most was *N. inermis*. This species is known from a few mountains in West Sumatra and we wanted to visit Gunung Gadut, a locality which has only recently come to light. This mountain is also home to *N. carunculata* var. *robusta*—an extreme variety of this species described by Nerz and Wistuba (1994). Our U.S. Air Force map (albeit an old one) showed various paths and trails going up to this mountain from the town of Solok, which is near the better-known Gunung Talang. We looked for these trails for almost half a day, but could not find them. Perhaps they have been reclaimed by the jungle since the printing of the map? Or, more likely, we simply looked in the wrong places! We then decided to drive down to Padang and see if there was a way up from the other side. Eventually we found a trail up from this side, but we did not have enough time to complete the walk. Having failed at the first attempt, we had to decide whether or not to try again the next day, or whether to climb Gunung Talang instead. We chose G. Talang, as we wanted to be absolutely sure of seeing *N. inermis*.

Our ascent of Gunung Talang was a rather unusual one and I suspect that not many westerners have climbed it using the paths we did! We hired a few local guides for the day and they took us along their hunting trails in a slow, winding ascent of the mountain. We did not quite reach the summit, which was a minor disappointment, but to climb such a spectacular mountain along virtually unused trails was great. We saw a lot of *Paphiopedilum* orchids, but once again, they were not in flower. The mossy forest on this mountain was particularly impressive. *N. gymnamphora* grew in dark places on the lower slopes of the mountain. Some of them had more substantial peristomes than others we had seen and I wondered if this was the plant named *N. rosulata* by Tamin and Hotta (1986). If so, any differences between it and *N. gymnamphora* are definitely not sufficient for it to be distinguished as a new species.

Further up, we found our goal. A large tree had fallen near the path and there was a plant of *N. inermis* growing on it. Only a *Nepenthes* fanatic could find this plant as amazing as we did—it has no peristome, little colour and is very small (Figure 6). Nonetheless, it is up there with the best species in my opinion. A few articles have discussed the possible prey-trapping mechanisms of this plant (see Hopkins *et al.* (1990) and Salmon (1993)). Salmon (1993) suggested that the pitcher secretes compounds which serve to intoxicate insects which land on the lid. These are then rendered paralysed and cannot move even if you touch them. He also suggested that the extreme viscosity of the pitcher fluid helped prevent the contents being washed away by rain.

In the wild, I noticed that the entire inner surfaces of *N. inermis* pitchers have a thin covering of pitcher fluid, which is so viscous that it feels sticky in the same way as the mucilage on the tentacles of *Drosera* species. We saw several insects



Figure 1: A lower pitcher of *N. ovata*. Photo by Charles Clarke.



Figure 2: A large upper pitcher of *N. sumatrana*—this one was about 30 cm height. Photo by Charles Clarke.



Figure 3: A lower pitcher of *N. gymnamphora*. Photo by Charles Clarke.



Figure 4: A lower pitcher of *N. bongso*. Photo by Charles Clarke.



Figure 5: An upper pitcher of *N. longifolia*. Photo by Charles Clarke.



Figure 6: An upper pitcher of *N. inermis*. Note the prey in the bottom of the pitcher (in silhouette). Photo by Charles Clarke.

trapped on the upper parts of the pitchers (on the inside) by this mucilage. They could not break free from it and were in the process of sliding into the pitcher. Because the fluid also acts as a lubricant, the captured insects slide down into the narrow base of the pitchers very easily. There, the walls of the pitcher are so tightly pressed together that there is no chance of rainwater washing the contents out. Presumably, this is where the prey are digested. It would be very interesting to see whether the secretions on the lid do in fact contain substances which are intoxicating to insects; whatever the case, the pitchers have a very sweet and aromatic smell. Although controlled experiments would be required to prove exactly how *N. inermis* pitchers work, it seems to me that they function partly as pitfall traps and partly as flypapers. Regardless of the final outcomes of such experiments, there is no doubt that *N. inermis* is one of the most unusual and remarkable of all *Nepenthes*.

The next plant we saw on Gunung Talang was *N. talangensis*. For a long time, people thought that this was *N. bongso* (see Hopkins et al. (1990), p. 23). This may have been due in part to the considerable confusion among horticulturists regarding the differences between *N. bongso*, *N. carunculata*, *N. pectinata* and *N. singalana*. Some of this confusion was resolved by Schlauer & Nerz (1994) but the differences between *N. bongso* and *N. carunculata* are still difficult to interpret (see below). *N. talangensis* was named by Nerz and Wistuba (1994) and it is not known from anywhere else. It is very common in the mossy forest near the top of G. Talang, but also occurs lower down. We saw some plants at 1800 metres. At first, we thought these looked like natural hybrids of *N. gymnamphora* and *N. inermis*. They certainly do have an intermediate appearance, but once we saw more of them higher up the mountain, it became clear that they were not hybrids. The mossy forest on the summit ridges of G. Talang is very easy to walk through, as there are many tracks formed by tapir, a large black and white coloured mammal, about the size of a large pig, which is found in Sumatra and Peninsular Malaysia.

On the way down the mountain, we saw a couple of very large *Nepenthes* plants, the first of which we decided (without much conviction) was a true *N. bongso*. Having not seen a clear-cut example of *N. carunculata* on the trip, I cannot honestly say that I understand the differences between this species and *N. bongso*. *N. carunculata* usually but not always has an appendage on the underside of the lid, towards the apex. However, because this is not always present and the other differences with *N. bongso* are slight, I could not be 100% sure of our identification.

Back to North Sumatra

Our final goal was to look for another plant which was partly (and invalidly) described by Tamin and Hotta (1986)—*N. spinosa*. The description of this species is yet to be sorted out, but we had time to have a quick look for it near Solok. This attempt turned out to be unsuccessful as well, but we did see a lot of *N. reinwardtiana*. As we had to get back to Medan to meet our flights back home, we started the long drive north, taking a different route so as to avoid visiting Sibolga again! We drove around the base of Gunung Talakmau, in case we wanted to climb it at some later date and there we found a few plants of *N. mirabilis* growing by the road. From there we went back to Lake Toba and on to Medan. In ten days, we saw eighteen species of *Nepenthes*, which was not bad going at all. While it is clear that there is still some confusion about certain species from Sumatra, the situation is a lot better than it was a couple of years ago, thanks largely to the sensible approaches taken by Nerz, Wistuba and Schlauer in describing new species.

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